Revised February 12, 2010

CITY OF Fremont

Project Address_____
Permit #_____
Reviewed by:_____

Solar Photovoltaic Residential Permit Checklist

	Yes	No	Section 1. - Required Documentation
1			*Site and roof plans shall clearly show the location of the electrical service, modules, (each string shall be identified), combiner box, inverter, ac & dc disconnects, conduit, junction boxes and battery banks. Minimum size 11" x 17" sheet*
2			**Three line** Electrical Line Diamgram showing the PV array configuration, wiring system, overcurrent protection, Inverter, Disconnects, and AC connection to building. *Minimum size 11" x 17" sheet*
			Calculations for Module, Array, and Inverter output shall be provided with all submittals
3			Specification Sheets for all manufactured components including but not limited to; PV Modules, Inverter, Combiner Box, Disconnects, and Mounting System. ***Installation instructions for any of the above must be provided at City of Fremont's request.***
4			***Provide photos inside and out of existing main service panel and sub-panels that are part of the PV system***
	Yes	**No**	
			Section 2. - Structural Review of PV Array Mounting System
5			**Roof Information**
6			Is the Roofing lightweight? Yes___ No___ (masonry, metal, wood, shake, etc.) If NO provide structural calcualtions.
7			Does the roof have a single roof covering? Yes___ No___ If no load calculations are required.
8			Provide method for weatherproofing roof penetrations (e.g. flashing, caulk) - DETAIL ON PLANS
9			**Mounting System Information**
10			The mounting system is an engineered product designed to mount PV modules? Yes___ No___ If NO provide details of structural attachment certified by a design professional
11			For manufactured mounting systems provide the following information: Manufacturer, Product Name and Model Number, Total weight of PV Modules and and Rails (include weight of all hardware), Total Number of attachment Points, Weight per attachment Point
12			**Roof clearances comply with State Fire Marshall and City of Fremont Fire PV guidelines**

Section 3. - Wiring and Overcurrent Protection

DC Wiring System

13			Source Circuit Conductors In Exposed Locations all conductors Shall be 90ºC wet-rated conductors (includes conductors in raceways) CEC 690.31(A)
14			*A SEPARATE* DC Disconnect within sight and 10' of inverter - required for all inverters ***with or without*** integrated disconnects
15			Bonding method for modules and rack system is in accordance with product listing information (Provide detail and supporting documentation from Module manufacturer)
16			*All equipment on the roof requiring servicing shall meet the required clearances of CEC 110.26. Plans shall show the required clearances.*
			AC Wiring System
17			In Exposed Locations all conductors Shall be 90ºC wet-rated conductors (includes conductors in raceways) CEC 690.31(A)
18			*A SEPARATE* AC Disconnect remote from inverter within sight and 10' of inverter - required for all inverters with or without integrated disconnects
			AC Point of Connection
19			*All bus bars and conductors comply with 690.64(B)2 - "The Sum of ampere ratings of overcurrent protection devices supplying power to a busbar or conductor shall not exceed the rating of the busbar or conductor." (exception 120% allowed for dwelling units)*
			Grounding and Bonding
20			PV System grounded in accordance with CEC 690.47 (C) Grounding Electrode Conductor sized in accordance with CEC*250.166 - Provide existing GEC type and Conductor size (NOTE: GEC must be run separately from EGC)*
21			*Grounding electrode system must be illustrated on the plans.*
22			*Plans shall specify type, size and location of existing ac grounding electrode*
23			Equipment Grounding provided and sized in accordance with CEC 690.43, 250.134,250.136, Table 250.122 - *Provide detail on plans with bonding method used for modules and racks*

NOTE:Verification that the Exisiting Main Service Panel is Safe and free of Electrical hazards - If unsafe Owner may have to have a licensed electrician correct or replace equipment.

NOTE: Local policy requires separate AC and DC Disconnects allow for safe servicing or replacement of all equipment in PV System

NOTE: If equipment such as Combiner Boxes are to be field built they shall be tested and listed by a Nationally Recognized Testing Laboratory

Section 4. - Signs and Labels

SIGNS AND LABELS

All Signs Shall be red background and white lettering. For outdoor installations they shall be engraved phenolic plastic type. Labels on raceways and other equipment shall be reflective, weather resistant, and suitable for the environment. This sheet shall be attached to all submitted PV plans.

All Raceways and DC Combiner Boxes labeled ***"Caution: Solar Circuit"*** every 10' and changes in direction - Cal Fire/Fremont Muni Code

CAUTION!
SOLAR CIRCUIT

Ground Fault Warning Sign on Inverter - 690.5

WARNING: Electric Shock Hazard. If a Ground Fault is indicated, Normally Grounded conductors may be Ungrounded and Energized

Field signs on DC Disconnect - CEC 690.53 OCPD

PHOTOVOLTAIC SYSTEM DC DISCONNECT
RATED MAX. POWER-POINT CURRENT: xxx ADC
RATED MAX. POWER-POINT VOLTAGE: xxx VDC
MAXIMUM SYSTEM VOLTAGE: xxx VDC
SHORT-CIRCUIT CURRENT: xxx ADC

Main Service Panel and Inverter - Install a permanent Phenolic plaque at the service entrance equipment denoting all electrical power sources and their location on front of the service equipment. A plaque shall be located on the inverter with the location of the main service equipment if not within sight. **Size 3"x4"** - CEC 705.10

Warning Two Power Sources! Photovoltaic Disconnect located at [state location of DC disconnect and inverter]

AC Disconnect - CEC 690.54

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OUTPUT CURRENT: xxx AMPS
NOMINAL OPERATING AC VOLTAGE: xxx VOLTS

At All Junction Boxes, combiners CEC 690.17

WARNING: ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND LOAD
SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

Required Inspections

A ladder is required for all inspections and shall extend 3' above edge and be secured at the top.

Provisions shall be made to verify the information located on the modules and equipment on rooftops. Inspectors will inspect rooftops from the ladder only. Since Inspectors are restricted from walking on roofs, provisions to show attachment, wiring, bonding/grounding, and module and equipment labeling and installation must be made. Digital Camera images may be used to satisfy this requirement and Inspectors WILL require Contractors to take photos during the course of the inspection.

1			For Structural Mounting System - A progress inspection at aprox 75% completion - Be prepared to show: Mounting System, Flashing, and Counter Flashing
2			When Modules are supplied with Junction Boxes or micro-inverters that require Field Assembly (I.E. BP Solar or Enphase) or Junction boxes that are to be located under the array modules a separate inspection of Module/Box Pre-Wiring is required before installing modules.
3			Final Inspection - 100% complete and all boxes, disconnects, and Components Shall be Open when Inspector Arrives. ALL required Signs and Labels Shall be installed per plan.

Note: Failure to comply with the above inspection requirements May result in re-inspection fees.